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Journal of the Amateur Photographic Society of Madras.

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EDITORIAL NOTES.

We were quite disappointed with the way in which the photographs were mounted in our last number, the paper frames not having stuck well. We shall try the experiment of having thicker leaves for mounting the prints next time. We must say a word about the "Car Procession" which appeared in our last number. Though the illustration appeared along with the others in the article on the "Gadabas," it has nothing to do with the subject-matter of the article—as, indeed, must be clear to any one who examines the picture. It represents the Car Procession of the Sri Venugopalaswami of the Temple at Bobbili. The negative was kindly sent to us by the Kumar Raja of Bobbili.

For our charming frontispiece this month, we are indebted to Major Youngerman, I. M. S., to whom also we owe the interesting article on Cameras. Both the picture and the article make us long for more from the same source, and we hope that the author will soon fulfil the promise which he makes at the end of his article.

The last number of the *Photogram* is remarkable in that Birmingham supplies the whole of the matter for it. Though the contributions come from one city, the articles and the illustrations, with the exception of a few, which may perhaps appeal to the Birmingham people only, are as varied and interesting as they usually are. It is certainly praiseworthy—not to say curious—that one city should make up the whole matter for such a technical journal as the *Photogram*; and we must say that the volume reflects much credit on the photographic population of Birmingham.

FORMALIN, as our readers are aware, is very much used in the preservation of natural history objects. It is useful to the photographer also. A writer in the *British Journal of Photography* suggests that it should be an excellent preservative of starch mountant. To prevent the attacks of the mildew fungus on carbon prints, the writer recommends a piece of blotting paper dipped in formalin to be applied to the backs of the prints before framing.

WE have just received the January number of our new exchange Journal—the *Photo-miniature*. It treats of the Blue-Print and its variations. Like the other numbers of the same magazine which we have seen, it is an illustrated monograph, within reasonable limits, on the subject it deals with, and is exactly what is wanted by the amateur who may be pressed for time. The popularity of the journal is indicated by the extreme rapidity with which the first editions are sold out, and reprints called for. The present volume gives, among other things, instructions for making blue prints on white ground, white prints on blue ground, for changing blue prints to black, green, violet, &c. Besides the "blue-print processes," strictly so called, the manual gives information concerning the ferro-gallic, beliographic, kallitype, and other allied processes. A short and useful bibliography is appended. The last few pages of the magazine are devoted to "Notes" on matters of photographic interest.

IT will be bad grace on our part—especially after the sympathy shown to us recently—not to congratulate the Photographic Society of India on its increasing popularity as shown by the large influx of new members. Great changes have been effected in matters connected with the Society. The matter and the get-up of the Journal have undergone considerable improvement. A new yearly competition has been instituted by the committee—the winner of the competition being regarded as the holder of the "Lady Mackenzie Challenge Medal."

THE May Number contains a pretty photogravure of "Apres l'orage," a much commended picture by Mr. Symes Scutt. We notice that with regard to contributions from members, the Society is moved by the same hopes and anxieties as we are. A portion of the Journal is set apart for the dissemination of information on matters concerning the Society. This will be read with as much interest by outsiders as by members of the Society. We are told that arrangements are being made to ensure a *regular* supply of home journals. This is a great desideratum. To the already numerous club attractions, a new one has been added in the form of "Afternoon tea." In this endeavour to improve photographic taste by the introduction of afternoon tea, we see a keen appreciation of human wants and think it might be imitated with advantage elsewhere.

BY the way, we may inform our members that we have got most of the latest Price-lists of Apparatus, &c., from English and American firms. They can be had for reference on application made to the Secretary.

CORRESPONDENCE.

SIR,

The following is an extract from a letter which I lately received from a friend in England :—

"Do you happen to know the process by which bright blue prints can be made on any sort of paper? I have not learnt how it is done, but I know that a wash is prepared, and the surface of the paper, porcelain or any other material on which you want to print, is coated and the printing done as with bromides only ; no baths are, I believe, used afterwards. It is most effective and can be done on all sorts of substances. I saw a number of ordinary envelopes with copies of photos on them, and I think Xmas cards, &c., might be manufactured in the same way.

"Will some one help with full instruction and oblige A. P."

Yours,
PILKINGTON.

[We tried in vain to get an answer to our correspondent's query. We looked through the Photo-Miniature volume which tells us much about blue prints but does not give the *recipe* wanted. Our correspondent does not, we presume, want to be told about ferro-prussiate or photo-ceramies, about both of which there are special treatises. What is apparently wanted is a particular method by which blue prints can be made on paper, or porcelain, or other substance. To obtain blue prints on porcelain permanently cannot be done without firing, we fancy.—*Ed*].

CONCERNING CAMERAS.

A CHAPTER FOR BEGINNERS.

WHEN first I took up the gentle art-science of Photography, now a good many years ago, I was fortunate in having for instructor an elderly gentleman who had gone through the mill in the old "wet plate" days what time they spoke of the "Black art" and the "Ruby chamber," and when to take a sun-picture involved a good deal more than pressing a button and (for a consideration) permitting some one else to do the rest.

Luckily for me, too, he had given up photography for many years and was consequently not in touch

with the more recent developments : so when it came to making a start he selected for me a nice half plate camera and tripod, a cheap French rectilinear lens, a properly fitting lens cap and a box of slow plates.

By this artful arrangement

(1) I was compelled to carefully select my point of view and look at the lighting of the subject before going to the trouble of putting up the apparatus ;

(2) I was unable to give quick exposures ; and

(3) I had some chance of obtaining decent unfogged negatives from the slow plates.

My feelings towards that old gentleman have since been those of lively gratitude mingled with respect : and some two years ago I had the pleasure of assisting him in the selection of his first hand camera !

My next venture in the way of cameras was even more retrograde from a certain point of view, for I was induced to purchase a very solid brass-bound mahogany whole plate apparatus which, with correspondingly massive tripod and three loaded double slides in a solid leather case, weighs, goodness knows, how many stone. But he will stand erect and mark efficiently in half a gale of wind, a very different affair, truly, from some of the modern double extension fairy-like instruments perched on an aluminium walking stick which sympathetically respond to every passing air and are practically useless as stand cameras except on the calmest of days—just when light and cloud conditions are apt to be least favorable for satisfactory work. My brass-bound mahogany box with its twelve inch Goerz double anastigmat has withstood many and varied climatic conditions and much knocking about without the slightest damage. It is quite portable in this land of the omnipresent coolie : and once recognizing the necessary limitation of subject imposed by the defects of its qualities, I have little hesitation in saying that a large plate taken direct generally shows more "quality" than an enlarged negative even when the latter is made by an expert in this particular line.

Now the advent of fast plates, modern lenses in rapid shutters has gradually so modified the "limitation of subject," that practically anything in season is now "takeable" in a fair light in some fraction of a second—and we have the hand camera in its multifarious forms.

But before saying anything about these wonderfully ingenious instruments in general, or the form which the writer affects in particular, I should like to explain that I have ventured to trouble the reader with a preamble about my old cameras largely to lead up to the statement that—*The hand camera is the most unsuitable of all cameras for the beginner.*

It is beginning at the wrong end of the business, for the production of really good work by the hand camera is three or four times as difficult as stand work.

My advice then is,—let the beginner buy a cheap stand camera with no shutter for the lens : let him learn to use his eyes, to study the composition of the picture on the ground glass screen, give time exposures, and master the development of slow plates —and then by all means let him purchase a good hand camera.

And—(a further word of warning)—be not deceived by Smith's little gem of a picture $2\frac{1}{4} \times 2\frac{1}{4}$—taken by a marvellously ingenious machine on somebody's "lightning" plate, and shewn as the average sort of thing he knocks off in lighter moments. Smith has just purchased his black box, and with the assistance of a thoughtful maker who has provided him with an ingenious magazine arrangement for wasting plates, has been loosing off at all and sundry and brought down his "gem" by mistake. (They *will* fly into it sometimes !). But ask him to show you his last dozen exposures. You won't see them, of course, for they went to the dust bin long ago. Why ? Well the little "finder" was deceptive (from want of agreement with the focal length of the lens), and so what was actually seen there at the moment of exposure failed to impress itself upon the plate. Then in spite of the "lightning" brand he was generally under exposing, because he fixed away at all sorts of subjects in any kind of light with a shutter moving much too rapidly. And then, having had no experience of how to handle a slow plate, and unaware of the highly unstable condition of silver bromide in a fast one, he proceeded to make acquaintance with "fog" in its various manifestations ; and finally that awful day, when leagues from his dark room a plate jammed and "the wheels refused to go wound," let us draw a veil over future proceedings ! Anyhow Smith has his "gem," which is perhaps more than most of us possess.

Perhaps after this digression I may be permitted to dogmatise and make the following statements with reference to this part of the subject :—

1. *The hand camera is the most unsuitable of all cameras for the beginner.*

2. *The hand camera has serious limitations, i. e.,* it can only be efficiently used for fairly open and well-lighted views ; it is unsuitable for portraiture, architecture, interiors and copying.

3. *The cheap hand camera is a delusion and a snare,* in this country especially, for in the hot weather it will warp and gape and admit light and possibly refuse to work altogether, and naturally a cheap camera has a cheap lens.

4. *It is of vital importance to have a good lens* —a lens which will cover the plate sharply to the edges at not less than F8. A cheap lens stopped down to F22 will give good results with time exposures on a stand camera, but be utterly restless at that aperture for hand work.

5. *It is almost of equal importance to have a good shutter*—one which will not cause vibration when working at a high speed. For ordinary exposures—say $\frac{1}{4}$ to $\frac{1}{40}$ second, the "roller-blind" shutter fixed in front of the lens is perhaps the most convenient : for very quick work—1/100 second and faster, it had better be of the "focal plane" type, *i. e.,* a narrow slit passing rapidly across and close to the face of the plate.

Now I wanted a hand camera myself sometime ago not to replace but to supplement the stand

camera I already possessed—and happening to be in London at the time. I fully availed myself of the endless opportunities thereby afforded. And as a personal experience may perhaps prove of interest to others bent on a similar errand, I venture to describe in detail how I obtained the eminently practical and satisfactory hand camera I would not now part with for a good deal more than was originally paid for it.

There is much competition at home now-a-days among the makers, and the enquiring amateur is very courteously received by such dealers as Fallowfield or Sands and Hunter, or actual manufacturers like Adams and Ross. The various types of hand camera were carefully examined and their mechanism and optical systems closely gone into, and the final result of much instructive tramping about town came to this—that what would best suit my personal requirements and the Indian climate was a 5 x 4 twin lens camera with dark slides.

"5 x 4 in size"—because this seems to make a more satisfactory picture than quarter plate.

"Twin lens"—because this optical system permits of the picture being seen and focussed full size and right side up and "dark slides," because I hold with plates and am shy of any magazine arrangement I have had an opportunity of examining.

Now a Ross' camera of this size and type with good lenses and six slides costs £ 27—say four hundred rupees, a sum larger than I was inclined to pay.

The first thing to be done then was to get the actual box, and buy the accessories separately. By good luck I succeeded in getting a second hand Ross' brass bound 5 x 4 camera alone, and six double slides in solid leather cases, all tested and light-tight, for the sum of £ 6— a regular bargain. Then the box was handed over to Mr. Sinclair, a photographic expert and manager of Ross's in Cockspur Street, who fitted the lenses,—the lower one a 7 inch Zeiss working at F 8 and the upper or view lens of exactly similar focal length but at one-third the price. A Thornton-Pickard shutter with the new valve attachment for long exposures, a light folding tripod, and an optically ground pale yellow screen completed the whole arrangement, which for hand and occasional stand work leaves practically nothing to be desired.

The details work out thus :

	£.	s.	d.
Camera and 6 double slides ...	6	0	0
Zeiss' 7 inch lens, F8 ...	4	10	0
French view lens	1	10	0
T—P. shutter and valve ...	1	0	0
Folding tripod	0	10	0
Yellow screen	0	5	0
Ground glass screen for use as stand camera ...	0	5	0
	£ 14	0	0

(A ¼ plate camera of this type and got together in a similar manner could be done for about £11.)

Thus with care one may get for Rs. 200 a really first class instrument second to none for the simplicity of its mechanism and the perfection of its optical system, and with the permission of the Editor I may perhaps on another occasion go into some working details for beginners, together with a few examples of ordinary and so called pictorial work.

E. P. Y.

OUR ILLUSTRATION.

OUR frontispiece this month is entitled "Spring Morning at Wapping."

The original negative was 5 × 4 taken at F. 8—on a very "fresh" morning at Wapping —exposure ⅛ sec. on a fast Isochromatic plate.

As there was no means at the time of making enlarged negatives, a print was made on matte silver paper, a suitable sky printed in; and the combined picture enlarged to whole plate size by copying with a long-extension camera.

As a matter of course the enlarged "grain" of the matte paper shews somewhat, but not obtrusively.

The sky negative happened to have been taken at Inverness during the previous autumn, but it seems to help the composition;—and the general effect of the picture re-calls (to the writer at any rate) the pleasant memory of a breezy spring morning at Wapping.

OUR HOME LETTER.

April 1900.

SOME recent experiments upon dark-room illumination by Mr. Howard Farmer of the London Polytechnic, are particularly interesting as showing that it is by no means necessary to work under the unpleasant condition of a very small source of illumination, filtered through an almost opaque medium. On the contrary, one can enjoy quite a flood of light, sufficient, indeed, to read by, at some distance from the lamp, provided always that light is of the right colour. But let me give a brief resume of Mr. Farmer's investigations as communicated to the Royal Photographic Society, and then add on my own account a word or two of practical advice.

In the first instance, he ascertained that an enormous percentage of light is lost in passing through the glass or fabric in ordinary use as much as 98 per cent. in some cases, so that, except in positions close to the lantern, distinct vision is impossible. The next direction pursued was to search for some colouring matter for use as a filter, and several solutions were found that completely eclipsed the ordinary substances in use both as regards safety and increased illuminating power. A solution of potassium bichromate, for example, passing the same intensity of light is 250 times safer than orange glass, and for equal safety gives a proportion of 254 to 1 in luminosity.

This extraordinary difference is due to the nature of the glass which transmits actinic rays to a considerable extent unless the intensity of the light is very much reduced, while, on the other hand, potassium bichromate is almost totally transparent to red and yellow, absorbs entirely the green, blue, violet, and ultra-violet rays. Mr. Farmer exhibits an electric lantern, the illuminant being surrounded by a solution of potassium bichromate three-eighths of an inch in thickness, which gives a light of about ten candles power, and produced a flood of illumination completely altering the character of the ordinary dark room. It is to be hoped that some firm or other will put lamps of this kind on the market, not only for the electric light, but modified also for gas or oil, if such an arrangement is practicable. For several years my own dark room lamp has consisted of a simple arrangement made of two thicknesses of canary coloured paper stretched or fastened round a framework of cardboard, or thin wood. At the top a small hole is cut for ventilation. This device is about two feet or so high, and can be placed over an ordinary lamp or candle or gas burner. It is perfectly safe for plates up to medium rapidity, and the advantages are first the comparatively brilliant and general illumination, and secondly, the cheapness. I believe the next year or two will see marked improvements in the lighting of dark rooms.

Apropos of the astronomical applications of photography, one cannot but be interested by the proposal to search for a new planet by means of the camera, which Prof. Pickering of Harvard, intends to make on the occasion of the next eclipse. The scheme is founded on the fact that the faintness of a star which may be photographed with a given instrument against the bright background of the sky, depends within certain limits on the focal length of the lens and is independent of its aperture, a lens of three-inch aperture having a focus of 11 feet, 4 inches. It is proposed to expose in the region of the Pole Star when the sky is darkened by the eclipse.

Some correspondence upon the subject of carrying cameras on cycles has been occupying the columns of *The Amateur Photographer* recently, and as the matter is one of general importance, I need not apologize for referring to it here. The prevailing opinion seems to be in favour of carrying the camera over the back wheel by means of one of the many carriers upon the market, and of strapping the tripod round the handle bar, or along the cross-bar. The latter method will not do where the tripod is of a "stout" pattern. A few prefer to place the camera on a carrier in front of the handlebar, but this position does not seem to be popular. There is another system, however, not mentioned by any contributor—of carrying the camera on the back in a rucksack, the form of knapsack now universally adopted by the Alpine climber. I have adopted this method more than once, and have found it convenient enough for cameras of moderate weight.

I have seen the announcement that a photographer in Germany is offering to make known to those who care to apply a method of preparing plates on a large scale without any plant whatever, and with very simple materials, at prices within reach of any one. I am sorry I have not this gentleman's address, but I regard this story as too much of the Rip Van Winkle type to be accepted without corroboration.

Turning to matters which more particularly concern the laboratory, allow me to mention the new reducer which Messrs. Lumiere have recently put upon the market. It consists of cerium salts and unlike ammonium persulphate, increases rather than decreases the contrasts in the negative. At the same time it acts more regularly and less violently than potassium ferricyanide. I have tried it on plates and lantern slides, and found it preferable to ammonium persulphate where the subjects were a little flat and increase of contrast was desirable. It is recommended that for an overexposed negative in which contrast is to be heightened equal parts of the solution and of water should be taken. The negative is placed in the solution dry, and the action observed carefully. Thorough washing is necessary. A negative which is only slightly overexposed and overdeveloped may be previously wetted and placed in concentrated solution one part, distilled water nine parts. The quantities, in fact, may be varied according to the depth of contrast desired. In the case of bromide paper prints the solution in equal part should never be used, and the second one (1 to 9 of water) should be considered as the strongest permissible.

Sliding covers of celluloid, for protecting the negative during development, are now to be had from most dealers here. They are handy when development is for some reason or other protracted, or when Isochromatic plates are being employed. Another handy appliance for the laboratory, called a splash preventer, may be obtained from plumbers and ironmongers. Affixed to any ordinary tap, it prevents the water from splashing as it drops to the sink below. The contrivance consists of a sort of India-rubber washer surrounded by metal with wire gauze, through which the water passes. For the dark-room sink it is extremely useful for one application in particular, the rapid washing of a negative, which, being placed underneath, receives a steady current of water that will effectually clear it of hypo in a quarter of hour or so.

The use of logwood and other dyes for toning or colouring carbon lantern slides and transparencies has been recommended recently by Dr. Vogel. The decoction of logwood slightly warmed works with the oxide of chromium in the image as a mordant, and fixes some of the logwood colour, which thereby yields a bluish-black tint. Certain blue-black and violet-black coal tar colours are also recommended.

Outdoor photography is now in full swing. During a few days recently spent in the country, I visited a somewhat out of the way mountain tarn among beautiful surroundings. Near the tarn there is a refreshment hut kept by an enterprising fellow who also has a boat and fishing tackle for hire. I

asked him to be photographed in front of the hut, smoking his pipe, "just like life." "Bless you," he answered, "there's hundreds photographs me, I've been taken twice this morning already." "Fresh fields are getting more and more difficult to discover," I thought to myself. But there is one great consolation to the patient, plodding photographer. At least 90°/₀ of the snap shots taken by Tom, Dick and Harry never see daylight. Photography, or at all events good photography, is not quite so easy a performance as some of the apparatus makers would have us believe.

PERCY LUND.

MAY COMPETITION.

Some very good pictures were received on "a Village Scene."

H. D. R., Nos. 1 and 2, are not pictorial, while Nos. 3 and 4 are. They are all somewhat flat, either from over-printing or over-developing. 3 and 4 are certainly over-printed. The spot in the sky in No. 4 should be blotted out in the negative. Nos. 1 and 2 would be improved in a way by cutting away from ½ to ⅕ of the foreground. They are all neatly mounted.

EXTRACTS.

Practical Colour Work for Beginners.

By A. E. Smith.

PART I.

Colour photography is ever in the air. Scarcely a week is allowed to pass without some allusion to this topic in one or other of the photographic journals. Yet how small a proportion of the vast army of photographers possess even the slightest theoretical knowledge of the subject. Hundreds of amateurs, aye, and professionals too, who have spent, perhaps, the greater portion of their existence at photography, men capable of turning out the best of results in monochrome, look upon colour work as a branch of photography beset with such over-whelming difficulties as to deter them from giving to it even a passing thought or consideration. Jogging along in the same old groove, heedless of modern progress and advancement in the hobby or profession of their choice, they never once stop to ask themselves the simple question—is it possible for *me* to produce a photograph in colour?

This is no imaginary picture, for the writer well remembers meeting a provincial photographer who, though he had heard a great deal about various methods of colour photography, had never seen an Ives "Kromskop." Delighted with the pictures shown him in the instrument, and the simplicity of the process, it was not long before he was hard at work on the contents of his greenhouse.

There can be no possible doubt whatever that there must exist some, as yet, unexplained causes for this general display of apathy, and lack of interest, in a subject which should be expected to excite the enthusiasm of every photographer, and I venture to think that it is not a very difficult task to locate them. Firstly, then, the lack of an up-to date text-book, free from technicalities likely to confuse the uninitiated. Secondly, the unique manner in which the subject is, from time to time, hashed up in the lay press; and last, but not least, owing to the numerous methods of tinting monochrome prints with aniline colours, or of changing the colour of the image by local application of various chemicals, which are too often put forward under the title of colour photography, or photography in natural colours. One such process has before now been ably critised in the columns of the A. P., under the befitting heading, "The Jackdaw in Peacock's Feathers." But still they come with unblushing impudence, heralded in under the same false banner, with no better object in view than the reaping of a golden harvest at the expense of a credulous public. These, then, are possibly some of the reasons to account for the comparatively small number of colour workers.

No matter in what branch it is pursued, monochrome photography is a delightful hobby, and there can be very few who, fortunate in the possession of a well-stocked garden or conservatory, cannot recall many a pleasant half-hour spent in the tasteful arrangement and lighting of fruit or cut flowers, preparatory to uncovering the lens. Yet how infinitely greater would have been the pleasure derived could but the addititional charm of contrasting and grouping their colours have been taken into consideration.

At the outset, be it understood, this article makes no pretence of dealing with the subject of photography in natural colours, but rather the reproduction, or imitation, of colour by the process oftentimes described as heliochromy, photochromy; but more commonly known as three-colour photography.

As possibly there are many readers of The Amateur Photographer who would like to try their' prentice hands at this fascinating branch of photography, it is the intention of the writer to put the matter before them in a clear and comprehensive manner, avoiding, as far as possible, all technicalities, in the hope that some of those who have dismissed the subject from their thoughts, under the impression that it is beyond the scope of their abilities, will be tempted to put one or other of the methods to be described to a practical test.

Let me, then, first of all, explain the theory of colour photography. Every reader knows how, by means of a spectroscope, the composition of white light may be studied. How, on looking through this instrument, a continuous band of colour is presented to the eye, commencing with red, through orange, yellow, green, blue, until finally violet is reached. Everyone, too, has heard of the theory propounded by Dr. Thomas Young and Professor Helmholtz, namely, that all these colours may be formed from three fundamental, or primary, coloured lights—a red, green, and blue-violet—and how Clerk-Maxwell and, in recent years, Mr. F. E. Ives have conclusively demonstrated the correctness of this theory.

If, therefore, we can match in this way any colour in the solar spectrum, it stands to reason that any of the numerous tints to be found in nature may be counterfeited in a similar manner. And not only can they be imitated by the blending of coloured lights, but also by mixing, or superimposing, the three primary, or pigmentary, colours of the artist—red, yellow, and blue. The exact tints may be readily ascertained in the following manner:—To find the primary blue, mix the primary coloured lights, green and blue-violet, when a greenish or cyan-blue will result; to ascertain the yellow, blend the primary lights, red and green; and to find the primary pigment colour, red, combine the primary lights, red and blue-violet, when they will be found to produce a magenta-pink, or a tint somewhat similar in colour to crimson lake. These colours are sometimes spoken of as complementary spectrum colours.

Magenta-pink is complementary to the green because these two lights would, if mixed, produce white. Yellow is complementary to the blue-violet because they, together, make white, and cyan-blue for the reason that, with the fundamental red, they, too, form a white light.

We have, therefore two sets of colours in use for the production of colour photographs by the three-colour process, the red, green, and blue-violet being adopted when we obtain our results by combining the primary, or fundamental, lights, and the three primary colours of the artist—magenta-pink, lemon-yellow, and cyan-blue—when it is desired to produce a positive picture on paper, or a transparency for the lantern, the Joly process alone excepted, the colours in this case being formed from red, green, and blue-violet.

By referring to the illustrations given on this page, the *modus operandi* of the two methods should be readily understood. These pictures are from negatives taken by the writer, produced entirely with inexpensive home-made apparatus, which will be subsequently described. The subject is a group of scarlet geraniums and yellow calceolaria in a terra-cotta vase, supported upon a box covered with a table cloth, bearing a design in red upon a blue-black ground. No. 1 is a print from the red sensation negative, No. 2 from the green, and No, 3 a positive from the blue-violet negative.

It will be noticed, upon careful comparison, that not one of these three prints are alike, this dissimilarity being brought about when taking the negatives by means of three coloured screens, or light-filters, which are used in much the same way as an Ilford screen is utilised with a chromatic plate.

When the three negatives are made upon one brand of plate, as, for instance, the Cadett "Spectrum," or a Lumiere "Panchromatic," the colours of the screens are respectively a red, green, and blue, of such depth of colour as to permit only those colours to pass which are desired to have an actinic effect upon the plate. In this way three negatives of varying densities are obtained.

To better appreciate the effect of these screens, or light-filters, lay a dark green ivy leaf upon a piece of red paper, and view it through the ruby glass of a dark-room lantern. While the paper appears considerably lighter in colour, the leaf has turned apparently black. This little experiment will show that the red screen will permit the image of the red paper to pass through, and be recorded by the sensitive plate, while to the ivy leaf, which is not required to take a very active part in the red sensation negative, the door is practically closed, its shape and form being, to all intents and purposes, represented by clear glass in the resulting negative. In a similar way, the green and blue-violet screens select only those colours which are required to reach the plate during the exposures for the green and blue-violet sensation negatives.

To return to our positives. The writer was once told that these looked just like any ordinary photographs, except that one was, perhaps, a little darker in places than another; and doubtless many who see them reproduced here will make a similar remark. But it is owing to this little dissimilarity that it becomes possible to reproduce the original subject in colour, either by the blending of the three primary, or fundamental, lights, or by superimposing the primary colours of the artist.

We will take the latter method first. Let us imagine these three pictures to be printed in transparent pigment, No. 1 in cyan-blue, No. 2 in magenta-pink, and No. 3 in lemon-yellow, and that with these three prints we are going to build up a picture in colours, or, in other words, to produce a facsimile in colour of the original vase of flowers. How do we proceed? First of all, we will lay print No. 1 upon print No. 2, and see what happens. We shall have magenta-pink geranium, and pinky-white calceolaria. The leaf on the left being a light yellow-green, and on the light side of the picture, will be bluer in colour than the one on the right, which is of a darker hue, and in shadow, while the vase and ivy pattern of the tablecloth will contain considerably more pink than blue. If we now add print No. 3, in yellow, the final, and complete, change of colour takes place. The vase will turn a terra-cotta colour, the leaves and flowers will assume their normal shades of green, scarlet, and yellow, pattern of the table cloth appearing in red upon a black ground.

Now let us look once more at our three prints, and see what part they play in the reproduction of these colours by the blending of coloured lights. In this case they will take the form of ordinary lantern transparencies on glass, and be projected upon a lantern screen by means of a triple lantern, the three slides being made to register one upon another, so as to appear as one picture. But, first of all, we must place in the lantern three coloured screens, representing the three primary coloured lights, red, green, and blue-violet (screens for this purpose may be obtained from the Photochromoscope Syndicate, 28, The Pavement, Clapham Common), and so adjust the light from the three limes that when the three coloured lights are blended together the lantern sheet apears quite white. It is now possible to practically test the composition of white light, and to find the tints of the three primary pigmentary colours of the artist by the simple experiment of placing a finger in front of one of the lantern lenses. If it be the blue-violet lantern, a yellow silhouette of your finger will appear upon the screen, the blue-violet being cut out, leaving only the mixed red and green lights where the shadow falls. Place it in front of the red lantern, and the shadow will appear a cyan-blue. Stop out the green, and it will appear a magenta-pink.

This, then, is exactly what our monochrome lantern slides are going to do when they are placed in front of their respective screens in the lantern carriers. They will stop out all coloured lights, excepting such proportions and quantities as are necessary to reproduce the colours of the original. For example, to imitate our red geraniums, we require nearly all red light, in various quantities, that is to say, more light in the high lights, and less in the shadows. Reference to positive transparency No. 1 from the red sensation negative will make it clear how this colour is to be allowed to reach the sheet: while in like manner positives No. 2 and 3 will explain how the green and blue-violet lights will be kept back. To reproduce the yellow calceolaria both red and green light is required to reach the screen, as those together form yellow. Further comparison of transparencies Nos. 1 and 2 will show these flowers to be represented by comparatively clear glass, thus allowing the red and green lights to pass; while in No. 3 they appear nearly opaque, consequently the blue-violet light is prevented from taking any part in the reproduction of their colour. In this way all the original tints may be counterfeited.

Enough has been said upon the theoretical side of the subject, and I trust my attempt to make it easily understood has been successful.—*The Amateur Photographer.*

(*To be continued.*)

Secco Films.

By Mr. Freeman.

The method of manufacture of Secco films is as follows: Paper is coated with a substratum, and upon that is placed the Secco film, which in turn is coated with the sensitive emulsion. Although exceedingly thin, the sensitive film is quite flat, and can be exposed either in an ordinary dark slide, in which case it must be backed with a sheet of cardboard or glass, or in any of the commercial film carriers or in a special carrier which will be placed on the market by the Secco Film Company. At present the films are only made in Germany, and the speed of the emulsion is 80 H. & D., quite quick enough for most instantaneous work, but when they are placed on the English market they will be made in three or four different rapidities.

After exposure, the process is only slightly different from that ordinarily employed. The film is first placed face downwards in a dish of cold water; being very thin it begins to curl, but as soon as the paper support is thoroughly wetted it becomes quite flat, and that is an advantage possessed by no other thin film. Three or four formulæ for development are given, but I have used two or three dozen modifications and all seem to act equally well; if one developer answers better than another it is pyro-ammonia, and that has been employed for nearly all the negatives that are shown to-night. The image comes up sharp and clear, and as the film is supported by white paper the details are very distinctly visible. After development the negative is washed and fixed in the same way as a dry plate; owing to the presence of the paper backing one cannot see when fixation is complete, but if it is held up to the light one can easily tell when all the silver has been removed. A number of negatives may be washed together like prints; the film will not readily come away from the paper, and as it will stand a good deal of rough usage it is not likely to be damaged during washing. Intensification or reduction, if required, should be carried out when the washing is complete, although it is possible to intensify or reduce after the final stage has been reached.

With each packet of a dozen Secco films there will be enclosed a dozen auxiliary films, which exactly resemble sensitive films except that they are not coated with emulsion; that is to say, each consists of a sheet of paper, a substratum, and a Secco film. When the negatives have been washed, one of these secondary films is soaked for from 30 to 60 seconds in a 2 per cent. solution of glycerine and water; then a negative is taken from the last washing water and placed in the glycerine solution, the two films are brought together face to face, drawn out in contact as in carbon printing, and very lightly squeegeed. It is at this point that many users of Secco films have failed. It must be remembered that the emulsion of which the negative is formed is very tender, and that if the squeegee is used at all heavily the image will probably be crushed or bruised; further, if the edge of the squeegee is not perfectly true, it will cause the emulsion to go into furrows which will mark the negative. The two films can now be roughly dried between blotting-paper, and then pinned up, or they may be dried by means of methylated spirit, or even before the fire, for the fact that the emulsion is now sandwiched between the Secco films and two pieces of paper to a certain extent prevents it melting. The best method, however, is to blot off the superfluous moisture, and then hang up to dry, and drying will be complete in about half-an-hour. When dealing with a number of negatives several of the auxiliary films may be placed in the glycerine at once, and taken out one at a time as required; no harm will be done if they remain in for ten or fifteen minutes; the longer they are left in the glycerine the more lim and pliable will be the finished negative, though its toughness will not be affected, whilst if they are not put in at all it will be comparatively hard and brittle.

When the films have been squeegeed and dried, all that has to be done is to strip off the two papers, which is quite easy and simple. Trim off the edges, and with the finger and thumb pull the paper off the film, not the film from the paper, and then repeat the operation with the remaining paper. You now have the image enclosed between two Secco films, and as the latter are water-proof, and to a certain extent acid-proof, it is almost impossible to damage the emulsion. The negative, as I have said, will stand a great deal of rough usage; it cannot be scratched; it can be wisped up in the hand and ironed out flat again, like a handkerchief; or one part can be folded down flat over another without producing a crack or crease. The entire thickness of the film when finished is one-five-hundredth of an inch, so that there can be no appreciable loss of sharpness whichever side is printed from; either side will take the pencil or stump without the use of a medium, and if the retouching is not satisfactory it can be washed off with a wet sponge. It is practically fire-proof, and if a match be applied to it, it will only shrivel up slowly. The films will be a great advantage to carbon workers, and to collotype workers, &c., as the ability to print from the reverse side of the negative will obviate the necessity for double-transfer or for a reversed negative. There is no difficulty in telling which is the right side, as the film supporting the emulsion will always be more or less stained in development, whilst the auxiliary film will be free from stain, but it is easy to mark the right side of it if it be thought desirable to do so.

If when the negative is developed one is not quite certain whether it requires intensification or reduction, the best method is to allow it to dry without squeegeeing on to the auxiliary film; a print can then be made through the paper support, and if intensification or reduction is necessary, the operation can be carried out after soaking the negative in water. If, however, the negative has been squeegeed and stripped, it should be placed for a few minutes in a 2 per cent. solution of glycerine, and then if two auxiliary films are squeegeed on to it, one of the films can generally be stripped off if a little care is used.

The price of Secco films will be practically the same as that of glass plates, or about 50 per cent. less than the current prices of photographic films, and they will be supplied in the usual cut sizes and to fit all existing roll-holders.—*Journal of the Camera Club.*

"Astronomical Photography."

By Canes Venatici.

The most simple way that I can direct the footsteps of the young astronomical photographer is by using an ordinary landscape camera with a lens of the single achromatic combination order of fairly large aperture, which lens must also be moderately long in focus, say about 24 in. to 36 in. focus. The longer the focus the larger will be the image of the object in diameter.

Take the moon, for instance. In a lens having a focus of 3 ft. the diameter of the image measured on the focusing screen will be as near as possible $\frac{3}{10}$ths of an inch in diameter, which, of course, is very small.

The proportional increase in diameter is $\frac{3}{10}$th of an inch for every 12 inches of focus. Let the instrument be either a photographic lens, refracting telescope, or even on the reflecting principle, Newtonian construction.

Why I chiefly advocate for the beginner a landscape lens and camera is that for astronomical work it is absolutely necessary to have some means whereby we can keep the object stationary, as it were, on the screen, otherwise a blurred image would be the result (through chiefly the motion of the earth moving in an opposite direction) and entirely fatal, if afterwards it is desired to make an enlargement therefrom.

Now, if we can by some simple way arrange to keep the object in view on the screen of finder whilst exposing, a very fine sharp image will result, and one that will bear enlarging to six or seven times. Attach a finder with a lens and screen, which is, in fact, a smaller camera, to the top of the camera. Make a cross in the centre of the screen of the finder, which must correspond exactly with a cross on the screen of the large camera, so that when the moon, for instance, is centred on the camera cross-mark screen, it shall be likewise on the finder screen, and finder clamped on to the top of camera so that they shall always agree. When the plate is ready for exposing in the camera, and looking at the finder screen, the keeping of objects perfectly motionless on some particular part of the cross and exposing, it will surprise the operator at the ease by which such a great apparent difficulty has been overcome. Bear in mind that by shifting the camera from one point to another, you at the same time carry the finder too.

The screens should be of the finest surface possible. A piece of putty rolled over the surface of a piece of clean glass will form a nice grained surface that will do for a temporary affair if nothing better can be obtained. The finest screens are made by the aid of fluoric acid fumes, but, as this is a very dangerous substance for inexperienced hands to meddle with, it is better to purchase a couple of screens.

Regarding the rapidity of the plate, I advise an ordinary brand of plate—those used for landscape work are sufficiently rapid and easy to develop. In making a start it will be advisable to have a friend to help to make the exposure whilst the operator is keeping the object on the finder screen, and make an exposure at the word of command, when all is ready. Two or three seconds' exposure for the moon when she is in her first quarter will be ample, and will make a more interesting subject than if taken when full. In taking a shot at the sun wait until there are one or two black spots on its surface, and, when exposing, an instantaneous shutter of the drop principle will answer splendidly. One to two hours will be required for the planets Jupiter and Saturn; ten minutes upwards for some of the nebulæ in Orion, Perseus, Andromeda, &c. Comets form very interesting subjects, and almost any amount of exposure can be given—the more the better. Using a well restrained developer, with careful application of the accelerator, will combine to give good results, and amply repay the operator for his trouble. I might add that it will be advisable to include a little bit of the landscape or house-top or chimney, if possible, on to the bottom edge of negative, which will make the results all the more interesting. If, after using this very simple piece of apparatus, and the operator becomes fascinated with astro or celestial photography, let me strongly advise him to go in for a reflecting telescope of the Newtonian form; if, perhaps, his pocket is not a lengthy one, to simply purchase a speculum of 7 to 12 ft. focus, with speculum plane and eyepiece tube and jacket—that is, if he is of a mechanical turn of mind—and fit the telescope up himself, which is not a very difficult affair and need not cost very much.—*The Photographic News, England.*

Lantern-slide making for beginners.

By Primrose Hill.

X.—STANDARD DEVELOPERS.—(*continued*)

(43) *Metol* (*Two Solutions*).—A : Metol, 50 gr. ; soda sulphite, 1 oz. ; water, 10 oz. ; potassium bromide, 5 gr. B : Soda carbonate (washing soda), 1 oz. ; water, 10 oz. Take equal parts of A and B.

(44) *Metol and Hydroquinone* (*Two Solutions*).—This is one of the most popular combinations both for lantern slide and negative making. A : Metol, 25 gr. ; hydroquinone, 12 gr. ; soda sulphite, ½ oz. ; water, 10 oz. B : Soda carbonate, 200 gr. ; potassium bromide, 15 gr. ; water, 10 oz. Take equal parts of A and B.

(45) *Ortol.*—As an all-round developer for negatives, lantern slides, opals, bromide papers, it will not be easy to beat *Ortol.* It keeps well in solution, can be used several times, does not stain plates, papers, or fingers unless very old, and apparently does not affect the skin as metol is apt to do.

Here is a two-solution developer that will be found to work well. A . Ortol, 50 gr. ; potassium metabisulphite, 25 gr. ; potassium bromide, 10 gr.; water, 10 oz. B : Soda carbonate, 1 oz. ; soda sulphite, 1 oz. ; water, 10 oz. Take equal parts of A and B.

(46) *Rodinal.*—This stands out as characterised by its great simplicity. We simply buy a bottle containing a liquid called Rodinal, and take one part of this liquid and add 25 to 30 times as much water, and the developer is ready at once.

Another formula well recommended is as follows: Rodinal, 1 dram ; water, 1 to 2 oz. ; potassium bromide, 1 gr. This is a slower-acting developer than that first given.

(47). *Amidol.*—One of the commonly accredited drawbacks of amidol is that it will not keep many hours in solution. This, however, is only a small matter in comparison with its most excellent qualities in giving a bright black-and-white slide. Thus for snow scenes or diagrams amidol is worthy of special notice. We have two convenient courses open to us. We may at the outset decide how many ounces of developer we are going to use at one bout, and make up exactly this quantity. Or we may prepare a certain stock solution which keeps well, and add the amidol for each dose of developer required. We give formulæ for each case.

(48). *Amidol* (*Single Solution*).—Each ounce of developer contains amidol, 2 gr.; soda sulphite, 20 gr. ; potassium bromide, ½ gr. This for 6 oz we should have amidol, 12 gr. ; soda sulphite, 120 gr. ; bromide, 3 gr. The sulphite is dissolved first and amidol last.

(49). *Amidol* (*Dry, with Stock Solution*) —The amidol is kept in a wide-mouth, well-stoppered bottle, and taken out with small bone spoon or glass ladle as required, added to the stock solution, well stirred with glass rod for a minute or so, and then used. Soda sulphite, 1 oz. ; water, 20 oz. ; potassium bromide, 10 gr. Take 1 oz. of

this solution and add 1, 2, or 3 gr. of dry amidol according as a delicate, ordinary or vigorous slide is required. Increasing amidol increases contrast. Increasing the sulphite reduces contrast. Observe that with amidol we have no alkali. The sulphite here takes its place, and we can omit the bromide if desired. But this is not recommended, as its absence often involves some fog. It is, however, an interesting experiment to develop a slide using 1 oz. of a one in ten solution of sulphite and two or three grains of amidol only.

(50). *Glycin.*—Here, again, we have an agent offering certain advantages which may be of special value to some workers. A grooved porcelain is filled with the very dilute developer. The plates put in the vertical grooves, and so are standing on edge. The trough is covered up. We leave the dark-room, write a letter, have supper, etc., and after half-an-hour or an hour return to the dark-room, take out those slides which are sufficiently developed, and put others in their place. This is sometimes called "stand" or "trough" development. Its chief point is that it acts very slowly, so that a dozen slides may be developed together without fear of any great errors of development. In case of over-development we can fall back on reduction as a remedy.

In 10 oz. of hot water dissolve 60 gr. of glycin, and 60 gr. soda sulphite, and then add ½ oz. of potassium or sodium carbonate. This is then diluted with, say, 20 or more ounces of water, and used as soon as cold. The more dilute it is the slower it works.

(51). *Glycin (Two Solutions) for Warm Tones.*—The use of glycin is by no means restricted to stand or slow development. It may be used as a two-solution in the following forms. A: Glycin, 50 gr.; potassium bromide, 10 gr.; soda sulphite, ½ oz.; water, 10 oz. B: Potassium carbonate, 1 oz.; water, 10 oz. For use take 10 parts A and add from 2 to 10 parts B, according as you want a soft, medium, or strong result.

(52). *Ferrous Oxalate (Three Solutions).*—This is one of the earliest developers used for dry-plate work, and in the minds of some it is still regarded as the best for slides—clean, bright, and free from fog or stain. For these reasons it still has a strong hold among many of those who use bromide opals and bromide papers. It is convenient to use this developer as a three-solution arrangement. A: Saturated solution of potassium oxalate. The oxalate is roughly powdered, added to hot water, and well stirred until no more can be dissolved. It is then set aside to cool. The clear part is then decanted or filtered away from the oxalate of lime which generally is thrown down from tap water. B: Saturated solution of iron proto-sulphate (also known as ferrous sulphate and as green vitriol). Clean crystals are roughly powdered and dissolved to saturation in *cold* water. The clear part decanted or filtered. To each ounce of pale green saturated solution add one drop of strong sulphuric acid. [This is intended as a preservative. But even with this the solution gradually discolours red-brown and becomes useless.] C: Potassium bromide, 8 gr.; water, 1 oz. To prepare a normal developing solution mix in the following order: To 6 drams of A add 1 dram of B, and then 1 dram of C.

N. B.—The B (iron) must be added to the A (oxalate), and not *vice versa*.

Normally this developer gives rich black and clear, bright, clean lights. But with some plates under-exposure gives a greenish tinge. With considerable over-exposure and a corresponding increase of bromide warm tones are obtainable.

(53). In using a ferrous oxalate developer we are always apt to get a slight veil or fog from tap-water impurities, unless the developer is well washed out of the film before it goes into the fixing bath. In lantern slide we should have at hand a pint jug of cold water to which has been added one dram (per pint of water) of acetic acid or hydrochloric acid. After pouring off the developer, do not wash in tap water, but use this slightly acid water. Give two rinsings of acid water, and then an acid fixing bath. Any one of those mentioned on page 12 of the "Perfect Negative"* will be found satisfactory.

NOTE on the repeated use of the same developing solution for several plates.

It may be laid down as a good general rule that no developer should be used after it shows the slightest tendency to stain the film.

Pyro developer should be mixed fresh for each plate. It soon discolours and stains, and gets frothy, giving bubble marks.

Hydroquinone can often be used for three or four plates, if developed quickly one after the other. But when it gives a stain it is of a very obstinate character, and practically incurable.

Ortol and *Metol* may be used several times, but they get slower and slower, and old solutions stain the finger-nails.

Amidol, like pyro, should be for one plate only.

Rodinal also discolours on exposure to the air. For repeated use probably Ortol stands at the head of the list.

Ferrous oxalate must be discarded directly it shows signs of getting muddy.

XII.—FIXING, CLEARING, REDUCING.

Many of our readers no doubt will remember that we recently published in these columns a somewhat exhaustive series of articles dealing with clearing, fixing, reducing, etc., as applied to negatives. What was there said very generally applies to slide-making, and the reader may be supposed to have them at hand for reference. There are, however, a few points in connection with lantern slide making which call for additional notice.

(54) And first with regard to *Fixing*. It is strongly to be recommended that a clear, *i. e.*, colourless, fixing bath be always used for slides. With negatives a slight staining of the gelatine is often of no great consequence. Indeed, some old hands prefer a slight stain and say it gives a better printer. But a stained slide is in quite a different case. We therefore advise the beginner to do one of two things. If he uses the plain hypo fixing bath, to use a fresh lot for every batch of slides made, and to throw it away as soon as it begins to become discoloured. This he will find is the case after pyro development more quickly than with any other agent.

The acid fixing bath already referred to, however, is not nearly so quickly discoloured, and therefore pays for the extra trouble in preparing it. It will be found convenient to prepare this bath in a fair quantity, say a Winchester full at a time, and use a small, new lot for each day's work.

The coating on a lantern plate is usually very much more transparent than plates used for negative making. The beginner is therefore liable to hurry the fixing. This should be avoided in all cases. The plate must be allowed plenty of time in the fixing bath; no harm will come of this if the bath be only clean and not exhausted.

* Published by Hazell, Watson, and Viney, Ltd. 1s.

(55) *Washing* also must be thoroughly done. And by washing we do not mean soaking in a dish of water. Ten minutes in a very gently flowing stream under the tap is better than a couple of hours' soaking.

(56) *Drying.*—Before the plate is set up to dry it should be *gently* rubbed with tip of a soft finger end or tuft of clean cotton wool. Drying must be done in a place free from dust. If a plate is allowed to partly dry slowly in a cold room and then is taken into a warm room, a drying mark *may* result.

(57) *Clearing.*—Lantern-slide makers are soon fully alive to the importance of keeping their slides clean, bright, and free from fog. Hence the number of formulæ for clearing baths is very considerable. It will, however, suffice here to give two or three.

(58) The general favourite is the acid iron bath. We give the result of compiling several formulæ, stating the extremes in each case: Iron proto sulphate, 2 to 3 oz ; alum, 1 to 3 oz.; citric acid, ½ to 1 oz.; water, 20 oz.

(59) The acid-alum bath is also efficient and very conveniently prepared. Thus: Take of saturated solution of common alum (made by pouring hot water on powdered Alum and then decanting the clear, cold solution), a pint in a clean wine bottle, add slowly with frequent shaking 1 dram of strong hydrochloric acid. Allow any sediment to settle, and use only the quite clear part.

(60) We give one more formula, which is supported by good authority, and regret we have not yet had opportunity of giving it a careful trial. Water, 10 oz. ; potassium ferricyanide, 10 gr. ; hydrochloric acid, 15 drops ; sulphuric acid, 10 drops. After fixing, and before clearing, the plate must be well washed, and again after clearing.

(61) *Reducing.*—It is not always easy to draw a hard sharp line between clearing and reducing. Generally by the former we mean the removal of an all-over-kind-of-misty-foggy look. But reduction proper generally refers to removal of some of the image or picture itself. It may, however, be doubted if we can remove the fog veil without at the same time removing a little of the image.

However, without staying to discuss limits, there can be no doubt that many slides are vastly improved by a very slight reduction. More than one prominent worker has said that the best plan is to over-develop every slide and then bring it back to the required point by a reducer.

(62) *Cyanide and Iodine Reducer.*—We give this first because it is so easily prepared, clean working, free from stain, and one can see exactly how we are getting along. A: Take a small bottle, say an ounce capacity, half fill with alcohol, then add flakes of black (metal-like-looking) iodine until you get a rich, deep port wine colour. This keep indefinitely. B: Now prepare as required (for it does not keep well) a solution of cyanide of potassium, 10 gr. to the ounce of water.

To prepare a reducing bath take enough of B to well cover the plate, add two or three drops of A, mix, and then insert the plate. Rock gently, and examine from time to time. Its action as a reducer is slow and steady. If not quick enough, the plate is first removed, a few more drops of the iodine solution added, and plate returned. After reduction the plate is well washed.

N. B.—Cyanide of potassium is a very dangerous poison, and should always be kept under lock and key.

(63) *Ferricyanide and Hypo Reducer.*—This well-known method has got a bad name with some workers because it at times leaves an obstinate stain behind. This untoward result is however, easily avoided if one or two simple points are kept in mind. The following is a convenient way of procedure. We need but two solutions, viz., A. Hypo solution, I part hypo, 4 or 5 water. B: A small bottle of saturated solution of potassium ferricyanide (*i. e.*, " red prussiate"). Of A take enough to well cover the plate, and place the plate in this plain hypo solution first. (This is, the secret of avoiding stains.) Then after, say five minutes' soaking place in the graduate a few drops of the B solution. Pour the hypo from the dish into graduate and return all to plate. Rock gently and watch closely. The action does not begin just at first, but when it does, it goes on fairly steadily. The plate must be removed a little before the desired state is reached, of the reducing action goes on a little while after it has left the dish. The plate is washed in a gently flowing stream for at least half an hour.

It should be noted that the two last reducers mentioned tend to accentuate contrast somewhat.

(64) *Ammonium Pursulphate Reducer.*—This agent differs from the two last, inasmuch as it tends rather to reduce contrasts. It is used by dissolving about 12 or 15 gr. (not more) of the salt in an ounce of water. Its action is slow at first. It converts the black deposit into a brownish shade. The solution is better freshly made, as it does not keep in solution. The action continues a little while, so that the plate must be withdrawn and well washed before the desired stage is reached in the reducing bath.

XIII.—INTENSIFYING.

(65) When dealing with lantern slides it is always difficult to separate intensifying and toning, because intensification so often alters the tone (*i. e.*, colour), and toning (coloring) nearly always alters the density. It will therefore in practice be well to remember that these two operations are often going on at the same time, because we may have a slide of good colour, and perhaps be disappointed to find that by adding density we have lost the desirable colour. And, again, it is useful to know that we can, in one operation, add density and also change the colour.

We shall, however, try in this chapter to give our chief attention to intensification; putting the colour question in a second place for the moment. And here, again, we note a point of difference between negatives and positives. In a negative a slight fog veil makes very little practical difference in the print, so usually we let it remain. When that slightly foggy negative is intensified we notice a corresponding increase of fog veil, and that it prolongs printing, but frequently the effect on the print is of no great consequence. In the case of lantern slides we may allow to pass a picture with a *very* slight fog veil all over, but if we intensify this fog, its effect not only is visible and highly undesirable, but it also has the further effect of reducing the lantern light by cutting off so much of its power. The practical moral is that before intensifying a slide we must see that the fog present is removed, or if allowed to pass, it must be *so slight* that *when intensified* it will not be visible on the screen. Reducing and clearing baths have already been given in a previous chapter.

(66) *Mercury Methods.*—This is capable of yielding a range of different densities, and also of different colours, according to the treatment which the plate receives in the second part of the process.

(To be continued).

COMPETITIONS.

(Open only to Members of the Society.)

SUBJECTS FOR MONTHLY COMPETITIONS.

June	Reflections.
July	Sunset.
August	Any moving object (Instantaneous).

HALF YEARLY COMPETITIONS—JUNE "*A Water Scene.*"

RULES.

1. *Two Special Competitions shall be held, in each year, in addition to a monthly competition.*

2. *The Committee shall select the subjects for the Special Competitions, and notice of the selected subjects shall be announced in the Society's Journal in February and in July of each year. The subject for each monthly competition shall be selected two months in advance by the members present at the monthly meeting, and shall be notified in the next issue of the Society's Journal.*

3. *Pictures, &c., competing for Prizes at the Special Competitions must reach the Secretary by the last day of January and of May, and those competing at the monthly competitions must arrive in time to be shown at the monthly meeting.*

4. *Prizes will consist of Silver and of Bronze Medals, and of Certificates of Merit.*

5. *Not more than one Silver and one Bronze Medal shall be given at each Special Competition, and one Silver and one Bronze Medal may also be given at these competitions for excellence in copying, enlarging, lantern slides, or any other special branch of photography. One Silver and one Bronze Medal shall be awarded half-yearly to the exhibitors who obtain the highest and the next highest marks respectively at the monthly competitions. The number of Certificates of Merit granted at each competition is left to the discretion of the Judges.*

6. *A member may receive only one Silver and one Bronze Medal in the special, and one Silver and one Bronze Medal in the monthly, competitions, held during the same year; but should a member who has been adjudged a medal be disqualified under this rule from receiving it, he shall be given a Special Certificate instead, marked 1st or 2nd Prize.*

7. *A Special Committee of three members shall be appointed Judges by the General Committee to carry out, subject to these Rules, all arrangements connected with the competitions.*

8. *The Special Committee shall be appointed after the Annual General Meeting in January, and shall hold office for one year, and any vacancy occurring will be filled up by the General Committee.*

9. *The Special Committee shall decide upon the merits of the pictures, &c., sent in for competition, and their decision shall be final. The system of judging the monthly exhibits shall be by awarding marks, a record of which shall be kept by the Judges, the marks being totalled and the results declared half-yearly. For this purpose, only the three highest marks awarded at each competition to each competitor shall be recorded, but not the aggregate marks gained by each for a number of exhibits.*

10. *If any member of the Special Committee is a competitor, the General Committee shall appoint a non-competing member to act as Judge at that competition instead of the competing member.*

11. *No exhibit shall compete twice, but pictures, &c., already exhibited elsewhere, may be sent in for the competitions.*

12. *Lantern slides sent in for competition shall be in sets of six, and shall be judged upon the screen.*

13. *The Special Committee shall not award any Prizes or Certificates, unless they consider the exhibits to be worthy of such distinction.*

14. *Each competing exhibit shall be the entire work of the exhibitor, and when sent in shall be accompanied by a Certificate in the annexed form :—*

> "*The (1) Arranging, (2) Exposing, (3) Developing, (4) Retouching (if any), (5) Printing and (6) Trimming and Mounting were done by me without assistance.*"
>
> ____________________
>
> *Member, A. P. Socy. of Madras.*

15. *All pictures for the Special Competitions shall be mounted, and may, at the competitor's option, be framed but not glazed. Those for the monthly competitions need not be mounted, but should be trimmed.*

16. *Each competing picture should have a name or title, which should indicate the nature of the subject.*

17. *No competitor shall be allowed to send in more than six pictures to compete for any particular Prize, but the same member may compete in all branches specified in Rule 5.*

18. *The pictures gaining 1st and 2nd Prizes at the half-yearly competitions, and the best pictures sent for the monthly competitions, shall, when practicable, be reproduced in the Society's Journal.*

19. *To give up-country members an opportunity of seeing the competing pictures at the special competitions, the pictures shall be circulated to all members of the Society, not residing in Madras, who apply to see them. As this arrangement can only be carried out by the cordial co-operation of the members themselves, they are expected to forward the pictures without delay to the next member, and to send one of the accompanying post-cards to the Secretary, so that by this means the progress of the pictures may be traced.*

List of Members whose Dark Rooms are available for use by Members of the Madras Amateur Photographic Society.

E. MAENNIG, Buckingham House, Tranquebar.

FOR SALE.

1. London Stereoscopic Coy's., ¼ Plate R.R. Lens, with Iris Diaphragms, Flange and Cap. *Second-hand.*

1. Taylor, Taylor and Hobson's, ½ Plate "Cooke" Anastigmat, with Cap, Dust Cap, two Flanges, Leather Case, and a Th. Pkd.'s T. and I. Aluminium Shutter with Speed Indicator. *Both little used and equal to new.*

1. Spencer "Stabilis." Hand magazine ¼ Plate Camera, specially made for India, 2 findeos, everset T. and I. Shutter, &c., &c., in baize lined teakwood case with lever lock. *Little used and equal to new.*

No reasonable offers refused.

Apply to,

THE KUMAR RAJAH OF BOBBILI,

Bobbili, Vizagapatam District.

NOTICES.

Members of the Madras Amateur Photographic Society are permitted to use this column free of charge for two insertions of each advertisement—all subsequent insertions of the same being chargeable at 2 annas a line. When an advertisement becomes liable to this charge, it will not be inserted unless a postal order or stamps to the value of the charge are previously sent, addressed to Graves, Cookson and Co., Scottish Press, Broadway, Madras. Advertisements received up to the 5th of each month will be inserted in the next issue of the Journal; those received after this date will be held over for the subsequent issue.

Subscribers, and others who are not regular dealers may make use of this column for advertisements by paying at the rate of 3 annas a line.

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N.B.—The Journal is issued on the 15th of each month, and is posted free to members of the Madras Amateur Photographic Society.

Entrance Fee, Rs. 5.—Annual Subscription *for Resident Members, Rs. 15; for Up-country Members, Rs. 12. Members joining after 30th June pay Half-year's Subscription.*

Candidates for Election—*should be proposed by one member and seconded by another; and they will be ballotted for at the following meeting.*

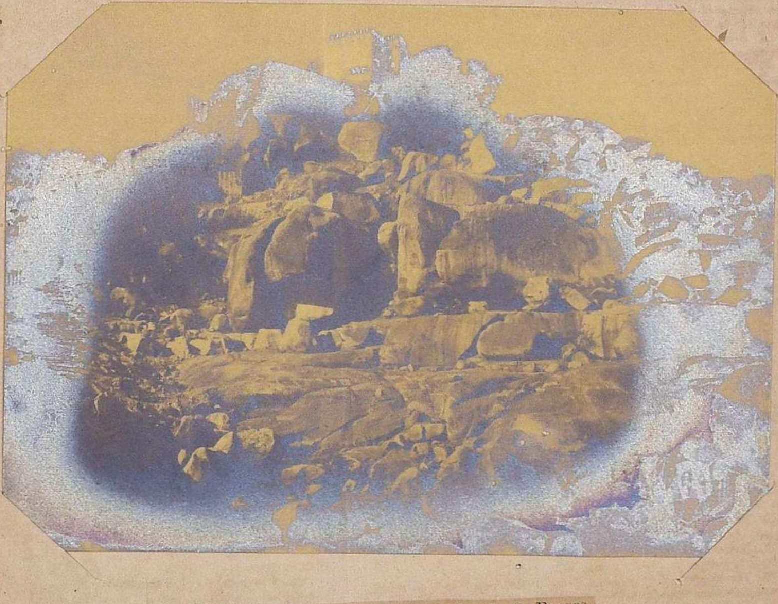
Ordinary Meetings—*of the Society are held on the first Friday of each month at 6 p.m. and members are at liberty to introduce visitors: meetings take place at the Museum, Egmore.*

Letters to the Editor—*should be addressed care of Messrs. Graves, Cookson & Co., Scottish Press, Broadway, Madras.*

Letters to the Honorary Secretary—*should be addressed to Mrs. Leet Palk, Locock's Garden, Kilpauk, Madras.*

Letters to the Honorary Treasurer—*should be addressed to A. E. Lawson, Madras Mail Office, Madras.*

Communications regarding the issue of the Journal—*should be addressed to the Publishers, as above.*



RAICHORE FORT—1. BY MR. C. E. PHIPPS.